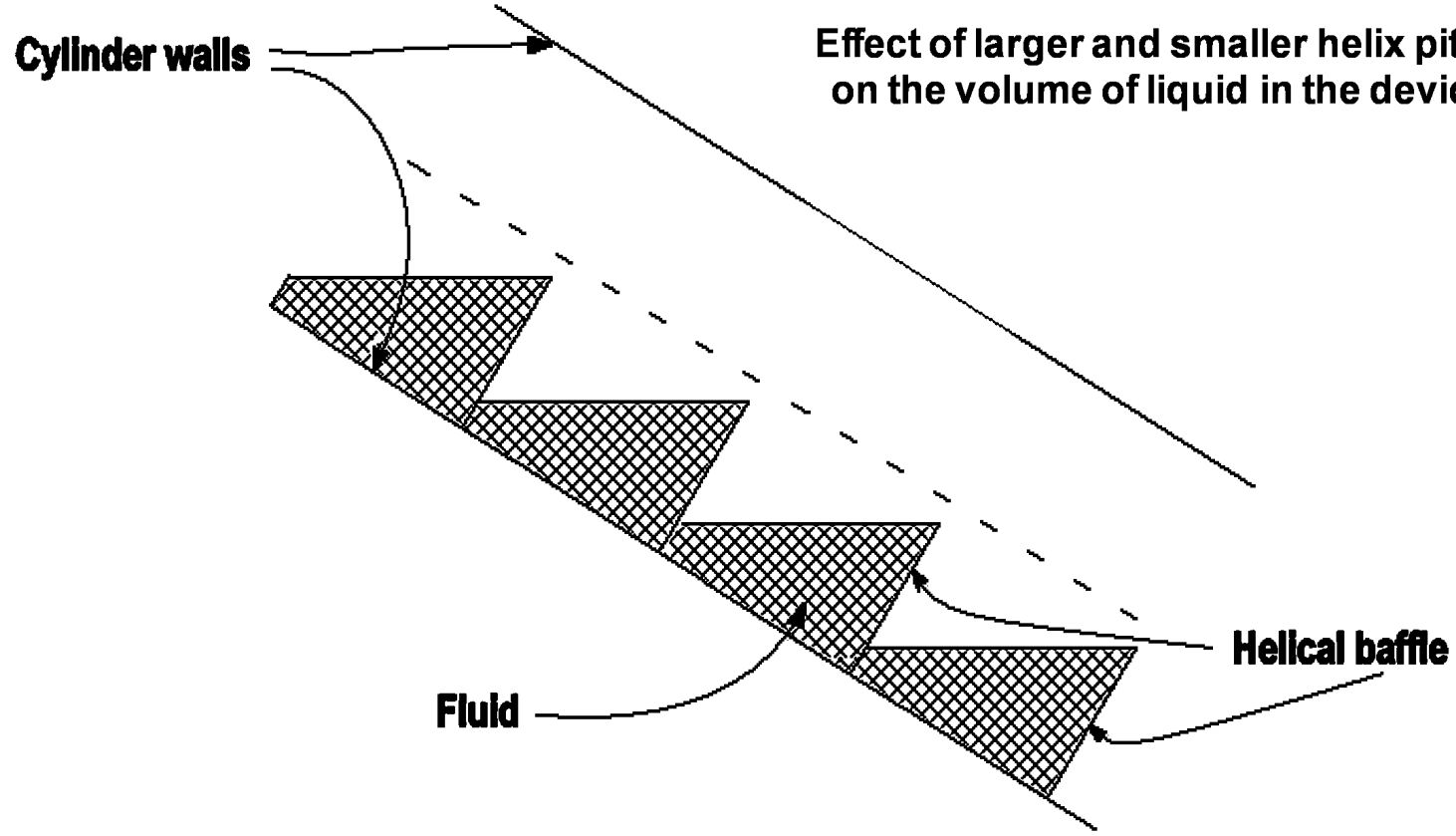
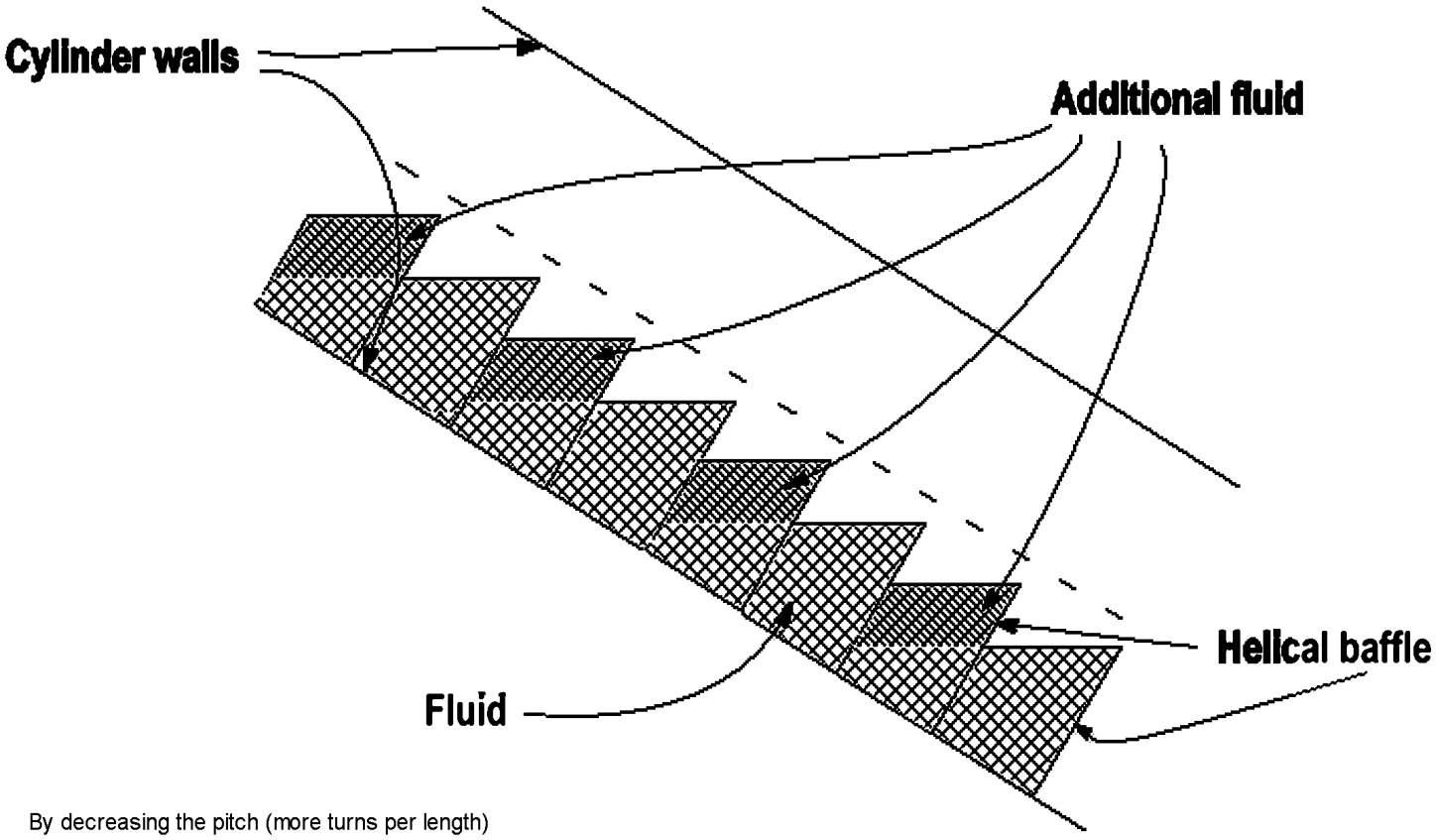
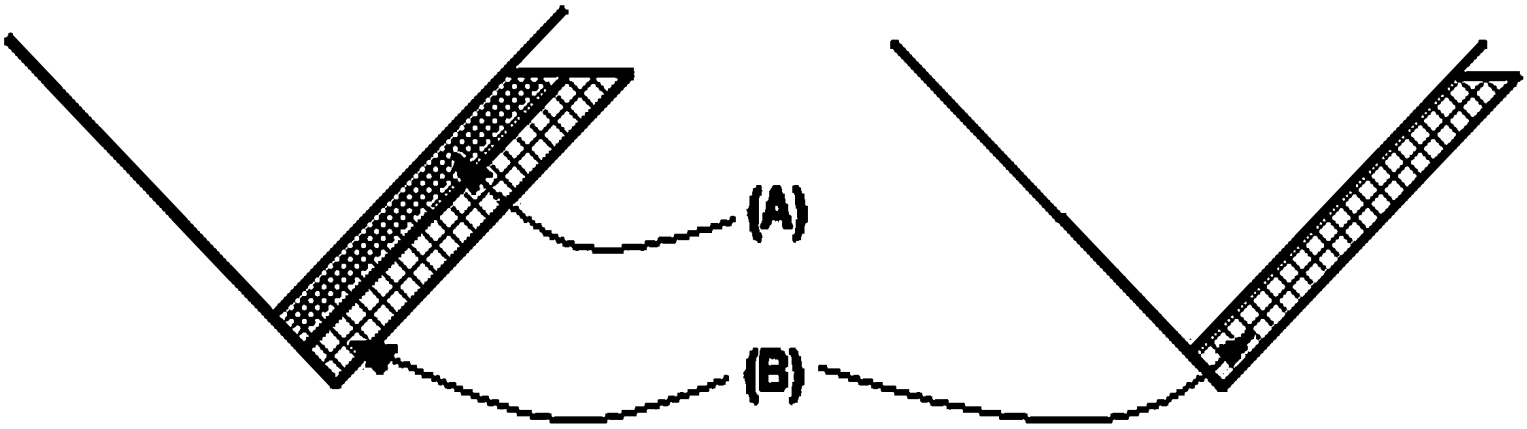
Figure 1

Effect of larger and smaller helix pitch on the volume of liquid in the device





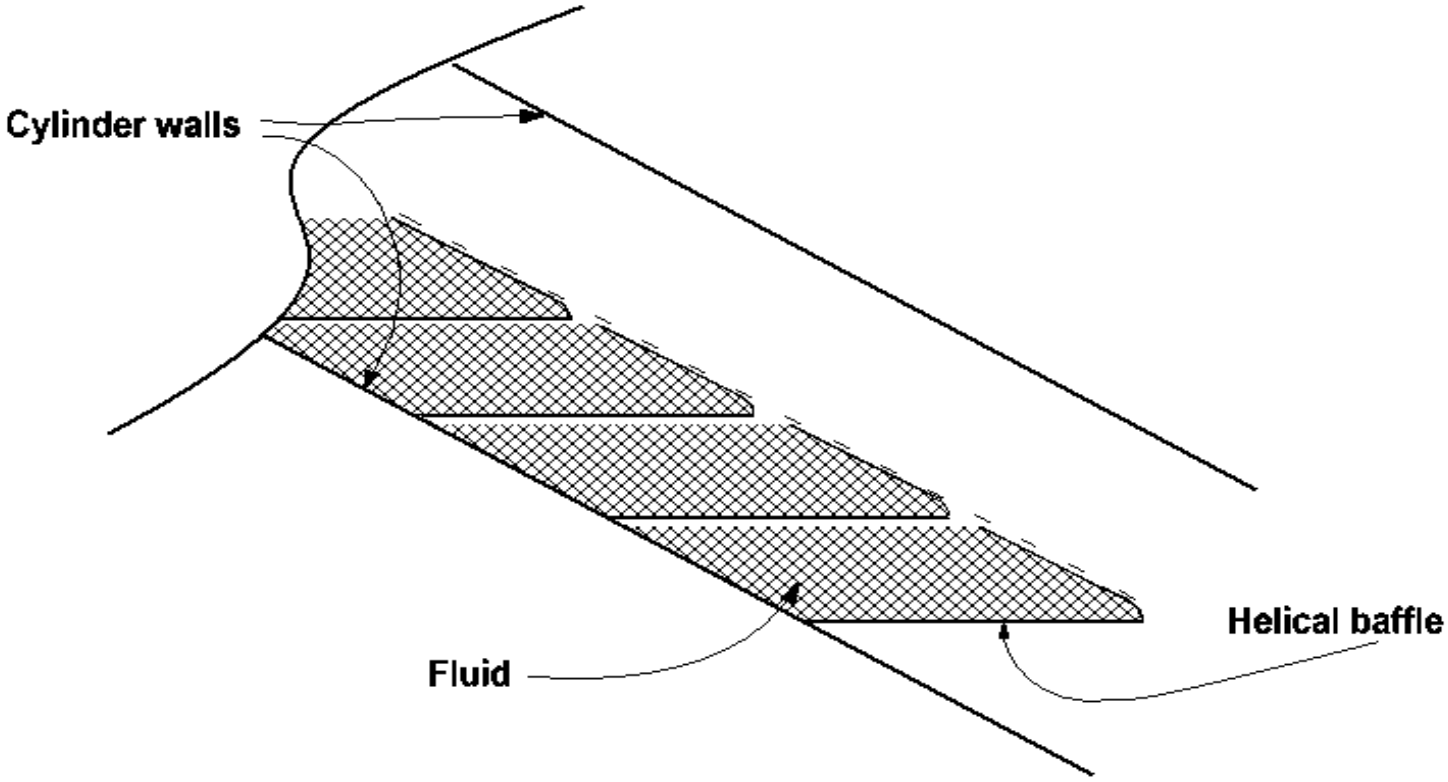
By decreasing the pitch (more turns per length) the amount of fluid for a given baffle crosss section is increased. The addition volume in the low er draw ing w ith a smaller pitch is show n w ith a different hatch pattern.



The average potential energy of water spilled from a higher pitch helix is larger than a lower pitch. Proof is provided by showing that the additional fluid cross section (A) in a higher helix pitch will have a higher center of gravity than the common cross sections (B)

Figure 2

Effect of larger and smaller helix pitch on the spill effect at the exit of the device



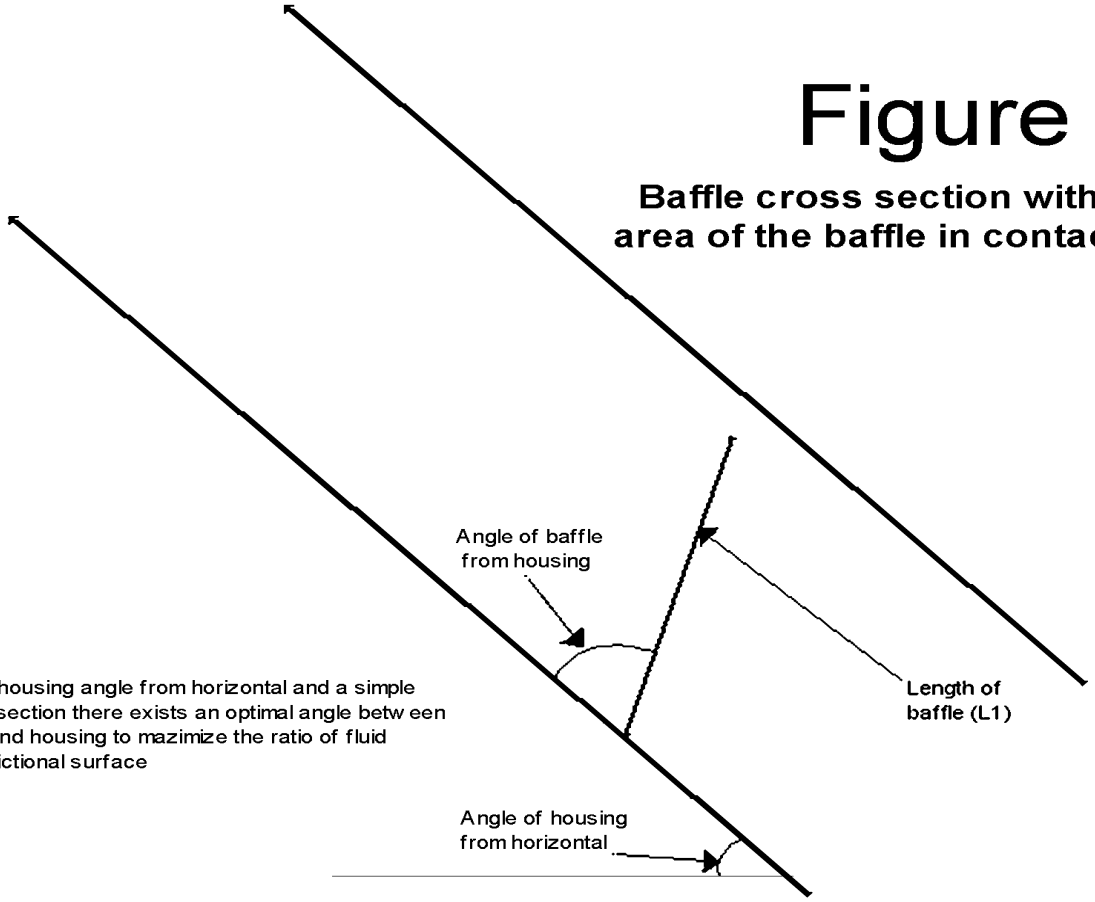
By varing the cross sectional design of the baffle, the amount of fluid contained housing can approch 1/2 the volume of the housing.

Figure 3

baffle cross section with a high volume of water captured in a helix turn

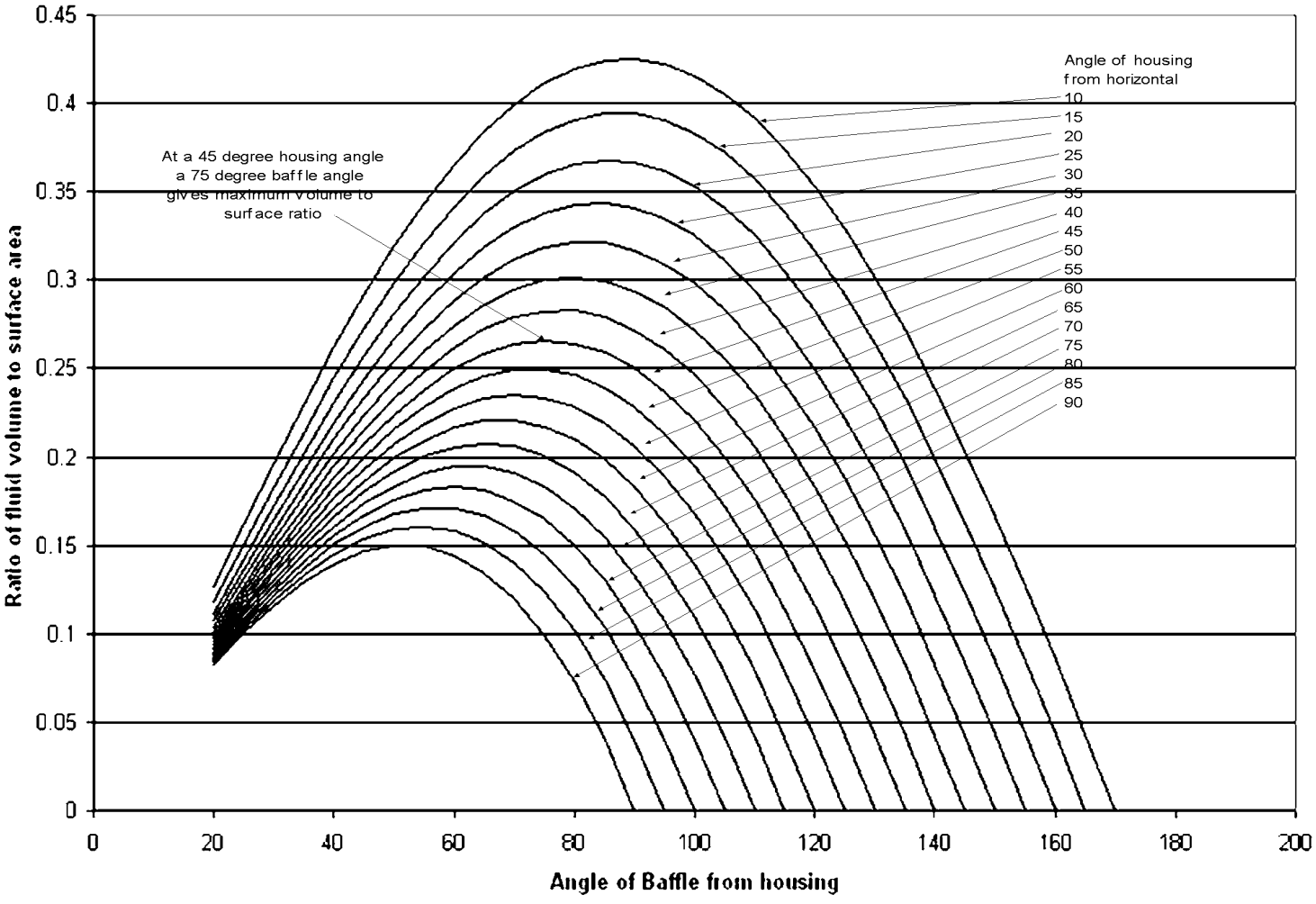
Figure 4

Baffle cross section with low surface area of the baffle in contact with the fluid



For a given housing angle from horizontal and a simple helix cross section there exists an optimal angle betw een the baffle and housing to mazimize the ratio of fluid volume to frictional surface

Effect of housing and baffle angles on volume to surface rationgles



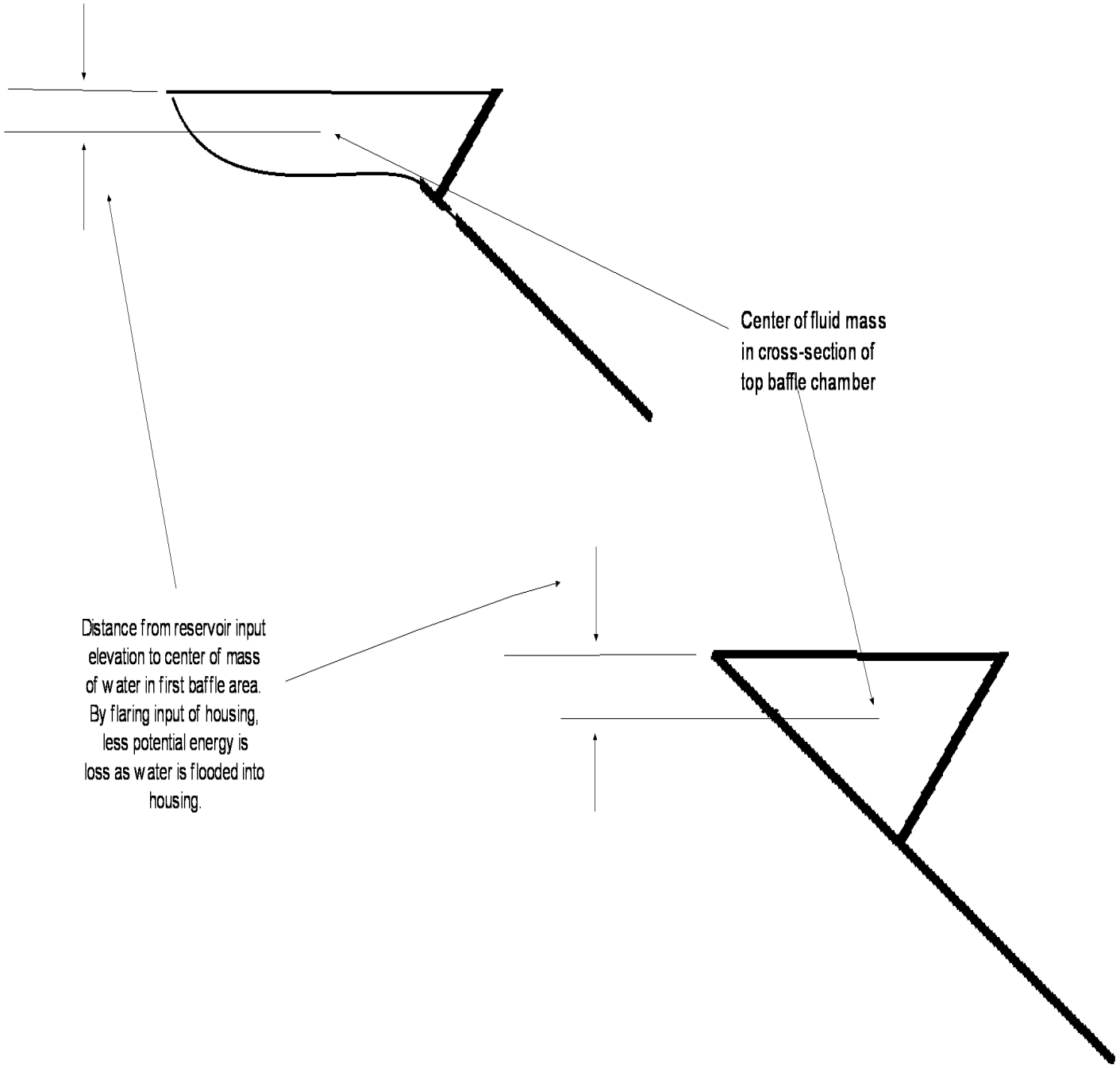
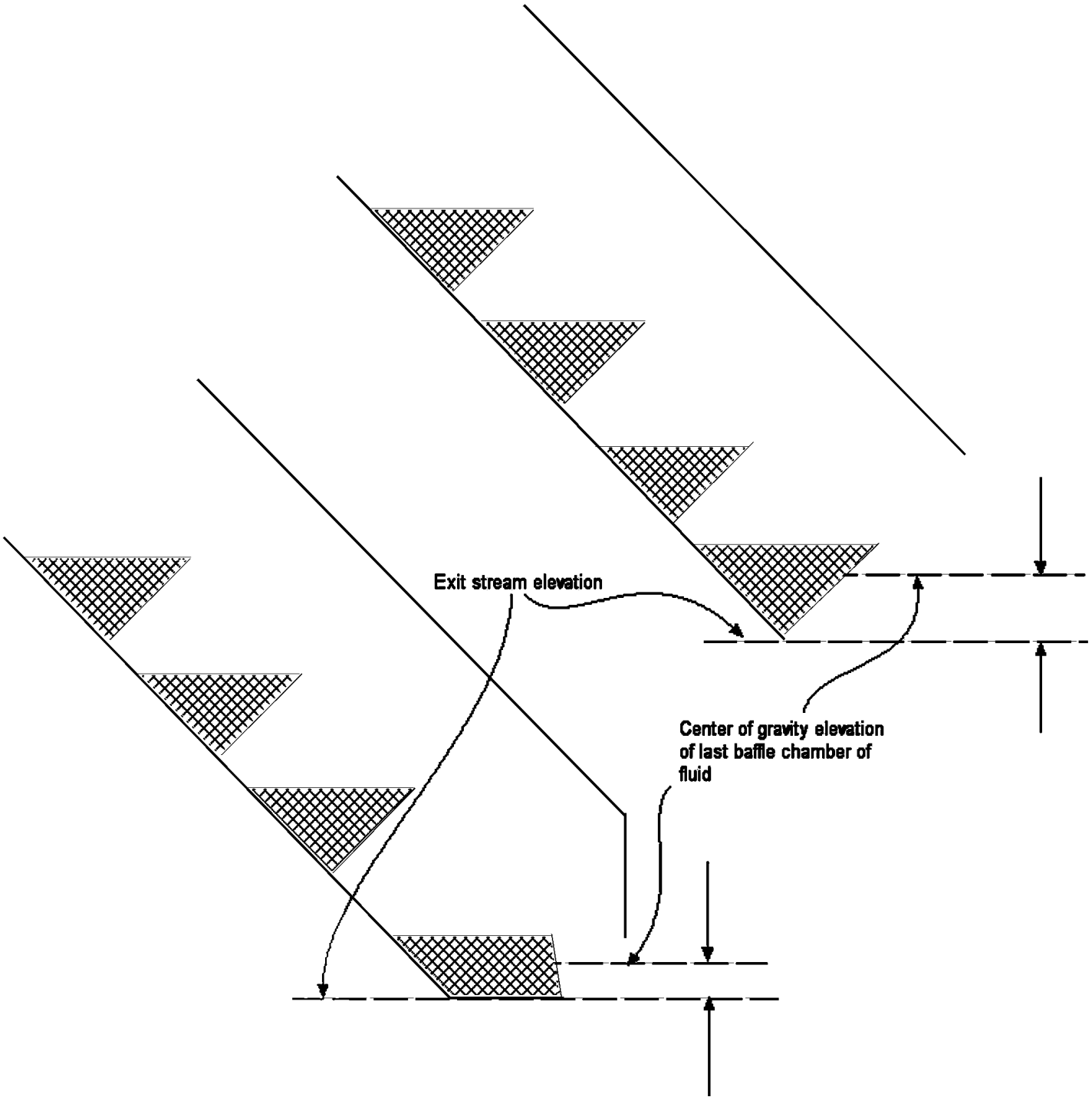


Figure 5

Effect of larger radius and helix pitch at the entrance of the device



By flattening the exit baffle cavity, the center of gravity of the exiting fluid is lowered prior to dumping and thereby reduces the uncaptured potential energy when the fluid is "spilled" to the exit stream

Figure 6

Effect of larger radius and helix pitch at the exit of the device

Siphoning mechanism at entrance to device would allow for flexibility in height of supply reservoir, simplification of fluid entry configuration and the ability for the device to be located in a position not directly adjacent to the supply reservoir.

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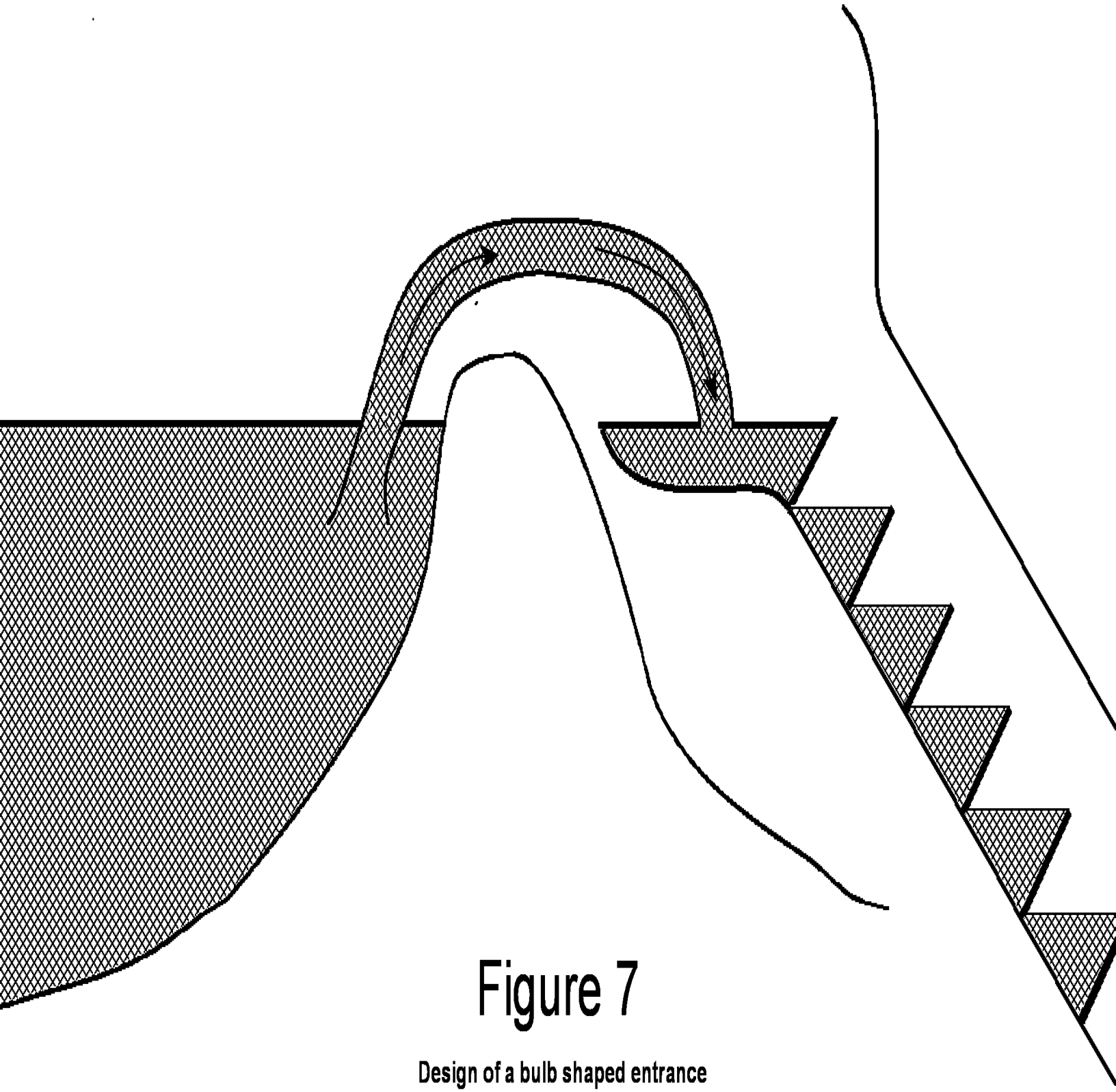

Figure 7

Design of a bulb shaped entrance utilized a siphon feed technique

Sections of the housing and baffle can be added or removed to change the length of the device and thereby adjust the entrance elevation as needed based on the level of the supply reservour.

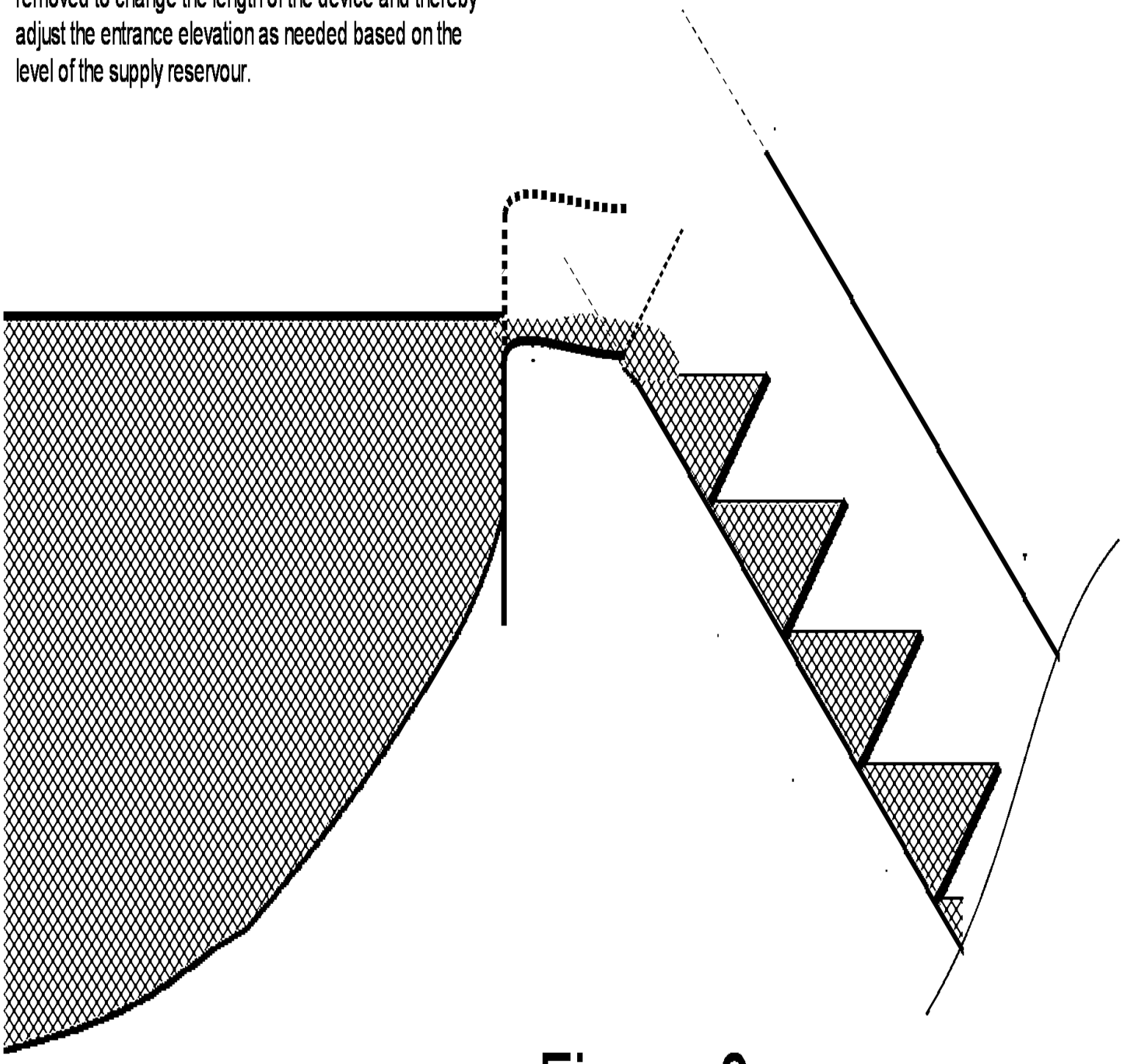

Figure 8

Change in input elevation via shortening or lengthening of the device

Changes in the elevation of the suppy reservour can be adjusted for by changing the angle of the housing and adjusting the dam spill level as depicted by the arrows below.

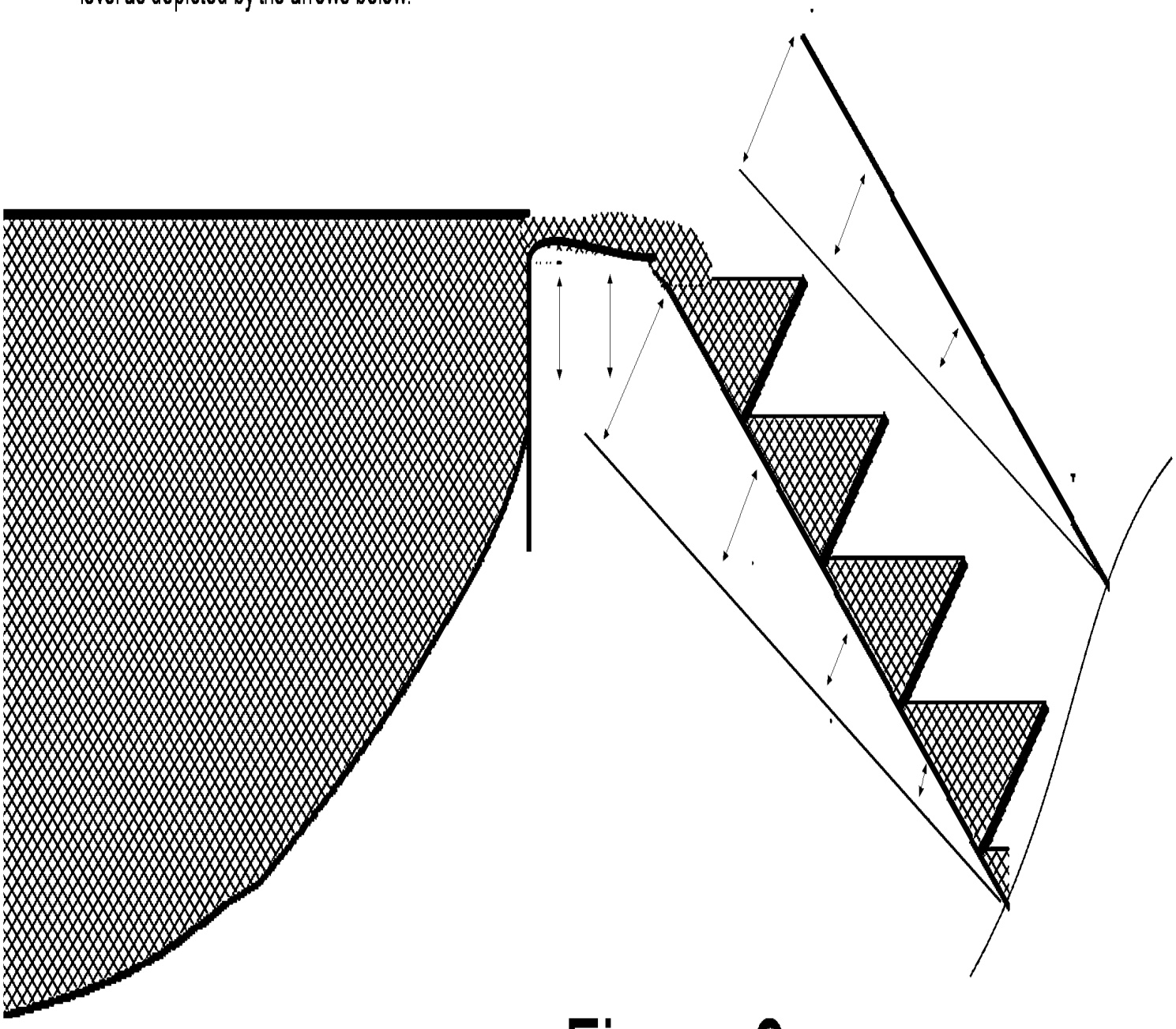

Figure 9

Change in input elevation via changing the angle of the device

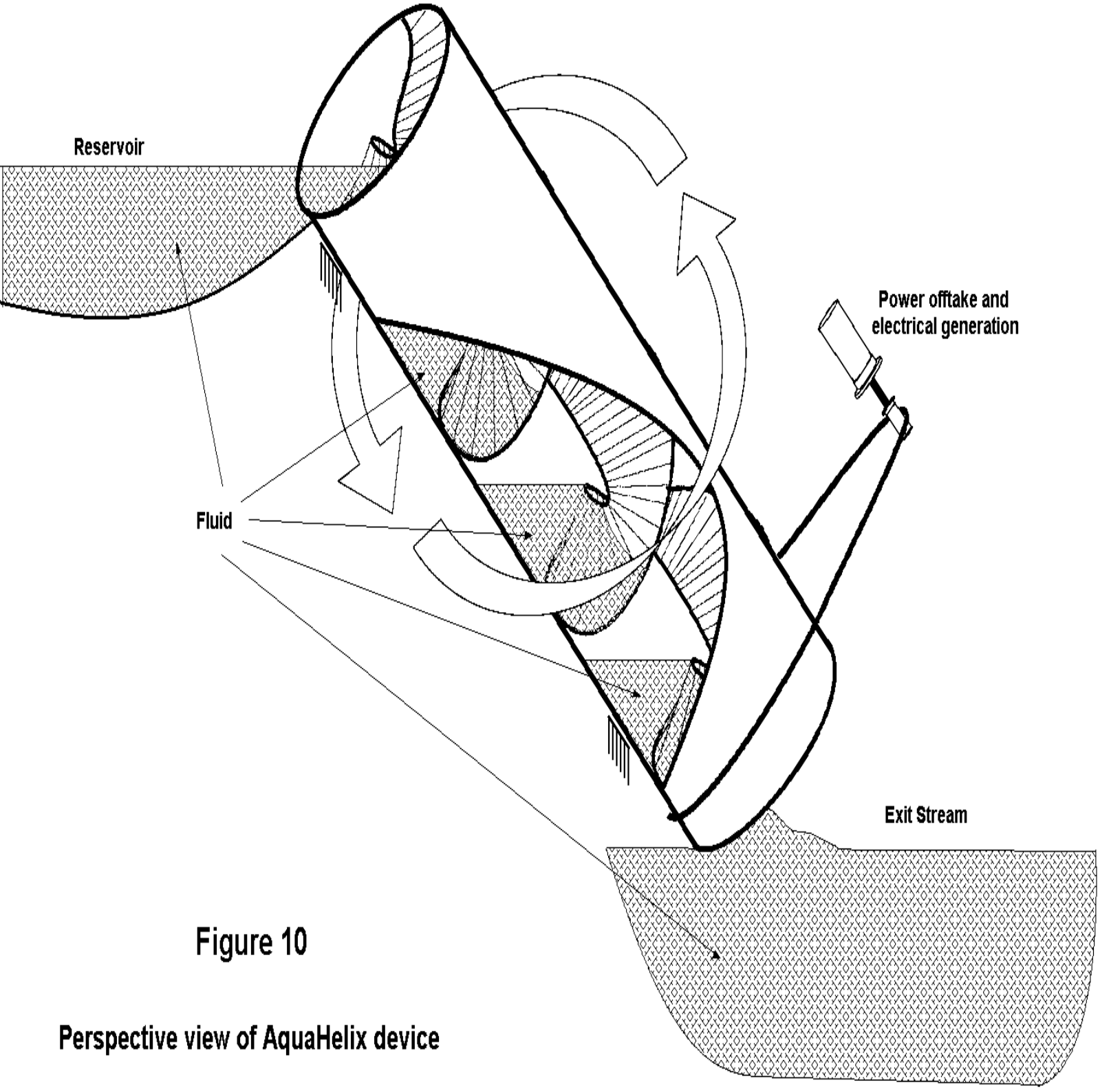

Figure 10

Perspective view of AquaHelix device